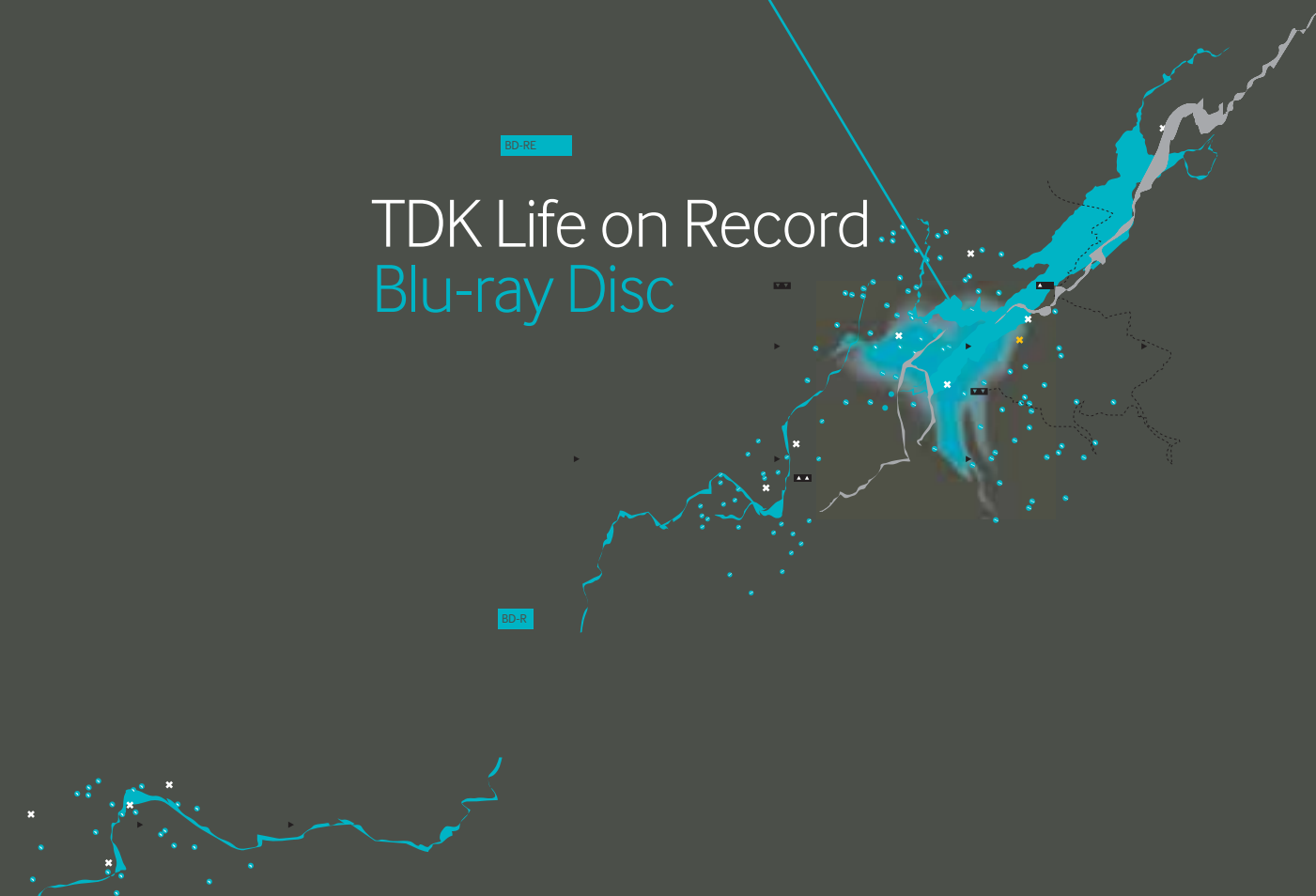
TDK
Life on Record

Blu-ray Disc™



TDK Life on Record
Blu-ray Disc

TDK Life on Record

A new blu era dawns

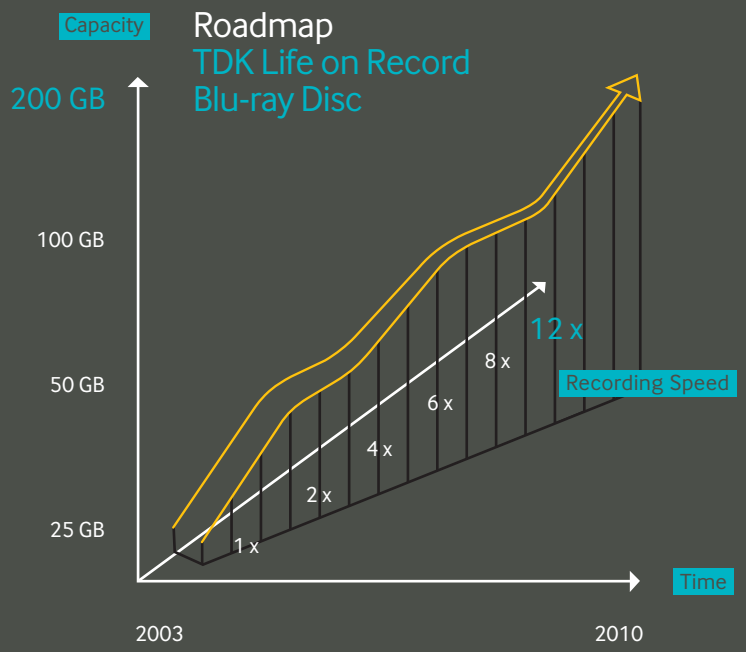
A lot is being said and written about new high definition technology. Our objective here is to explain what's it's main benefits to the world are, and to explain why you'll need the Blu-ray Disc from TDK Life on Record to make the most of them.

The world of DVD has been the most successful since the VHS cassette, but we are now in the era of High Definition. The shift to HD technology, brings new benefits to pretty much all of us through High Definition Television (HDTV), high capacity data storage, high intensity video games, and better image quality and sound home film entertainment.

HDTV offers 1080 lines of resolution, versus 576 lines PAL, and 480 lines for regular NTSC signals. The extra lines based on bit rates (transfer data rates) mean a better, sharper, more highly defined image reproduction.

All these additional image details, definition and data require a far greater storage capacity to keep them safe and secure, and that's why you'll need the incredible Blu-ray Discs from TDK Life on Record.

TDK Life on Record Blu-ray Disc as a Reference Medium



- The outstanding characteristics of the TDK Life on Record Blu-ray Disc exceed the standards of the Blu-ray Disc format.

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This establishes the TDK Life on Record Blu-ray Disc as a key reference medium and guarantees a high compatibility with Blu-ray Disc hardware products in the market.

TDK recording media were the first to market with bare Blu-ray Disc media, revolutionary single sided discs that are cartridge free thanks to the unique Durabis2 protective hard coat finish.

Single layer 25GB discs and dual layer 50GB products are available now, whilst TDK continue to drive forward the frontiers still further. An astonishing 100GB disc is already in development alongwith with faster transfer times.

You can trust TDK Life on Record as always to deliver the highest quality, most cutting edge storage media solutions, whatever the format or generation.

Blu-ray Discs are the latest in a proud line of TDK recording media break throughs in a distinguished 70 year history.

Another TDK RECORDING MEDIA first

1969

One small step: Selected by NASA for the Apollo 11 mission, TDK recording media audio tape records first words ever spoken by mankind on the moon.

1978

TDK recording media launches its first VHS videocassette. Company begins R&D for optical recording technology.

1989

TDK recording media introduces the first recordable CD with 550MB capacity.

1998

TDK recording media launches the first recordable DVD with 3.95GB capacity on a single-sided, single-layer disc.

2003

TDK recording media launches the first 25GB Blu-ray Discs in Japan; the discs are cartridge-based.

2006

One giant leap: Introduction of 25GB single-layer and 50GB dual-layer Blu-ray Disc media featuring DURABIS hard coating for superior durability without a cartridge.

1. BD-R 50GB
2. BD-R 25GB

3. BD-RE 50GB [rewritable]
4. BD-RE 25GB [rewritable]

Introducing the TDK Life on Record Blu-ray Disc

The arrival of the Blu-ray Disc meets an emerging need for greater storage capacity ushered in by a series of recent developments in the world of media that are set to change it for us all in the years ahead.

First to meet that need is TDK Recording Media: a household name in recording media for over a generation. Many of you will remember TDK recording media as the brand of choice for you and your friends' shared recordings when you were growing up.

Today, as then, it's TDK Life on Record leading the way in this new era.

The TDK Life on record Blu-ray Disc is all about much more storage capacity in the same physical space: but why are we going to need it?

Backward Compatibility

Why opt for a Blu-ray Disc?

By virtue of its features, such as high storage capacity and high data transfer rates, the Blu-ray Disc offers many application possibilities:

- HDTV recordings
- Data backup/data storage
- Next generation video games
- Film and TV productions
- Home computing applications

aspect01. HDTV

- High Definition Television (HDTV) is expected to replace standard television in the coming years and is already available on selected pay channels. Compared to the PAL and SECAM formats, HDTV offers up to five times more detail.

  And as picture quality improves, the amount of storage required to record such a high-resolution television signal without loss of quality also increases.

  Due to the large amount of television signal data, viewers can only record approximately 20 minutes of programming in HDTV quality on a conventional DVD.

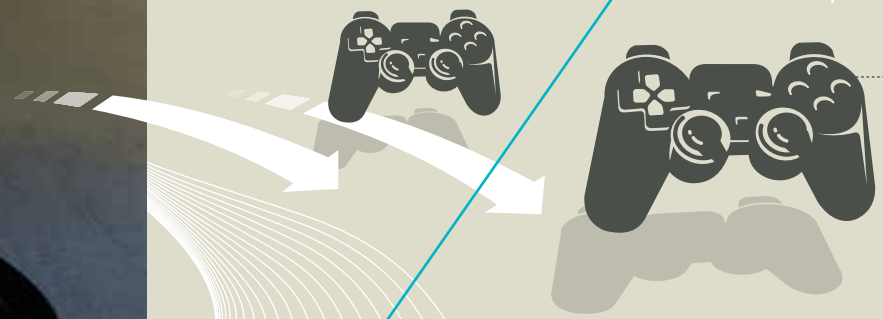
Each 25GB disc gives 5x and 50GB Blu-ray Disc 10x the storage of a conventional DVD, allowing for 2 hours HD quality video recording for a 25GB disc.
High definition broadcasting which launched in Europe in 2004 is now on it's way across Europe, in time it is expected to reach throughout the continent. High Definition broadcasting is already growing fast in the U.S. and Asia.

A short time from now we expect HD to have captured the imaginations of Europe's TV viewers. Their need to store and share astonishing quality HD images and uncompressed sound will be met by TDK Life on Record Blu-ray Discs.

aspect02. Films

- The Hollywood studios are actively backing the new world of High Definition and the Blu-ray format and the roll out of new Blu-ray film titles is gathering apace with full 1080p resolution and 7.1 channel channel surround sound. It also opens up the possibility of internet interactivity.

SAT
370



aspect03. Video games

- The next generation video game consoles are based upon HD technology and offer gamers a more intense gaming experience with more vivid visual effects, enhanced sound and increased internet connectivity.

  SONY's Playstation 3™ is the first video game console to utilise Blue laser technology with full HD capability so the gaming experience is enhanced visually, audibly and with interactive internet capability.

- 10x more storage than DVD for 50GB Blu-ray Disc.
- High data transfer rates.
- Ultra robust durability.
- Pure recording perfection.
- Maximum precision.

aspect04. Data storage - massive backups with 144 Mbps

As a result of the ever-increasing amount of legal requirements concerning archiving and retention of business records, data storage and backup solutions are becoming more crucial for businesses and also in the multi-media home.

The Blu-ray Disc allows future data backups to be performed with a throughput of 144 Mbps. In addition to the greater storage capacity [10x more than conventional DVDs for the 50GB Blu-ray Disc], the Blu-ray Disc together with its high data transfer rates offers a genuine alternative to other types of backup systems.

Never enough space?

What exactly is a Blu-ray Disc?

Now we've got our heads around what you do with a Blu-ray Disc, it's time to uncover how and why it works.

The Blue-violet laser

The Blu-ray Disc format utilises a blue-violet laser with a shorter wavelength to enable higher storage capacities. Compared to a CD with an infrared laser and a wavelength of 780nm or a DVD with a red laser and a wavelength of 650nm, the Blu-ray Disc format utilises a blue-violet laser with a wavelength of only 405nm. A nm is equal to a millionth of a millimetre.

Due to the blue-violet laser's shorter wavelength, it is possible to write smaller data pits and therefore to drastically increase the data density on the Blu-ray.

The structural Design of the Blu-ray Disc

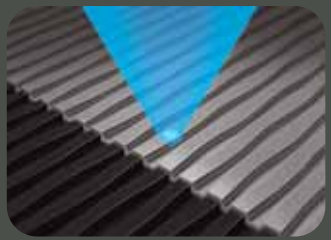
The structure of a Blu-ray Disc differs fundamentally from the structure of a CD or DVD.
The recording layer of the Blu-ray Disc is covered by a mere 0.1mm thin cover layer in order to achieve an optimal distance between the data track and the drive's optical system.

The combination of this special structure and the blue-violet laser allows for a very high data density. Compared to the DVD with a data track pitch of 0.74µm, the Blu-ray Disc's data tracks are located extremely close together with a track pitch of 0.32µm (1µm=1/1000mm). The blue-violet laser beam is only about one-fifth the size of the red laser beam of a DVD and consequently achieves a 500% higher data density.

Blu-ray Disc: True high density recording.

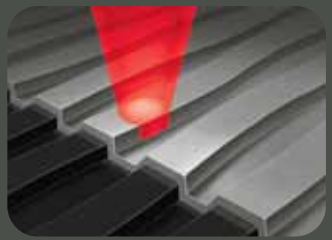
A blue laser is used for Blu-ray as opposed to the red laser utilized for DVD.

BD Track pitch: 0.32µm



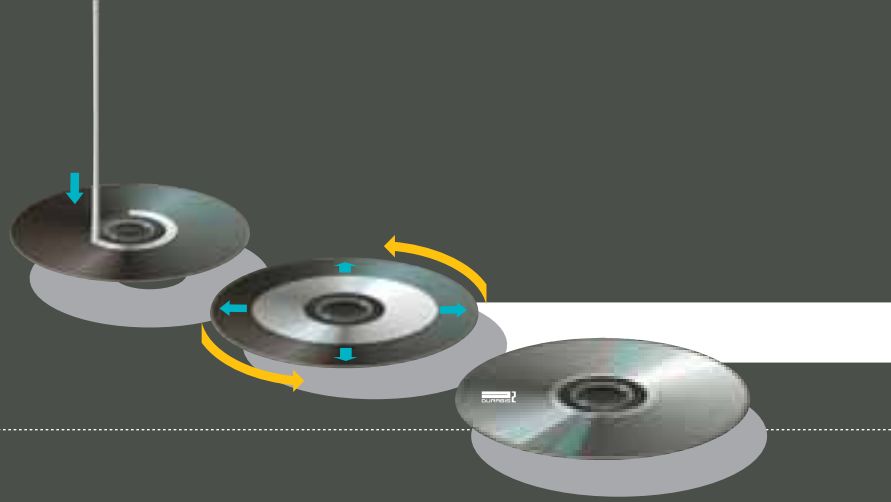
1µm (= 0.001 mm)

DVD Track pitch: 0.74µm



1µm (= 0.001 mm)

TDK Blu-ray technologies



tech01.

High-precision Spin Coating technology

The high-precision Spin Coating technology enables TDK recording media to furnish its Blu-ray Disc with an extremely smooth and precise cover layer.

tech02.

DURABIS2 technology

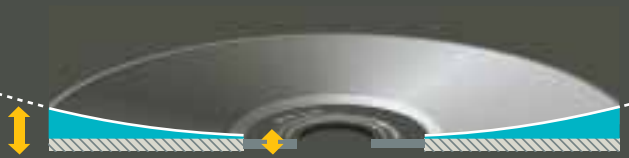
DURABIS2 technology makes TDK Life on record Blu-ray Disc industry leading scratch-resistant.

tech03.

Special Recording Layer technology

Special Recording Layer technology makes higher speeds and multiple recording layers possible.

New Spin Coating Technology
A uniform protective coating.



Conventional Spin Coating Method
The outer section becomes uneven.

High Precision Spin Coating: for reliable performance

tech01.

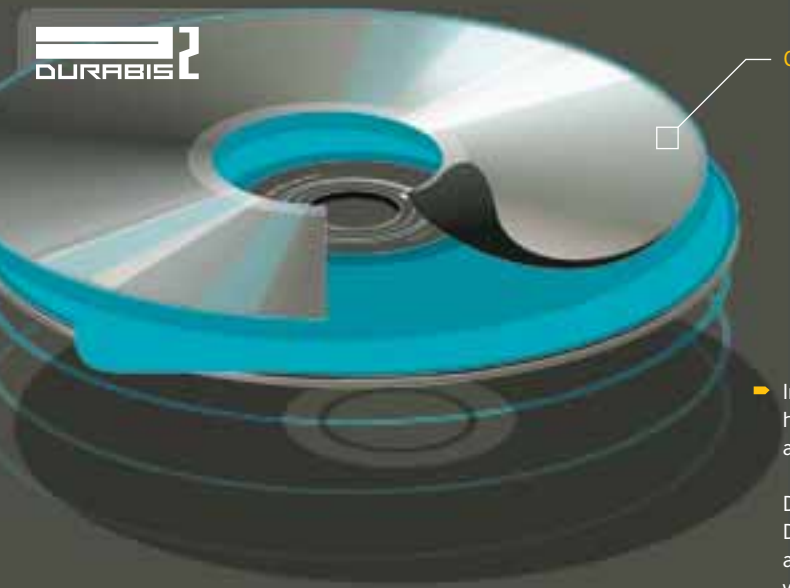
- The recording layer of the Blu-ray Disc is located just under the cover layer and is thus especially susceptible to scratches. The cover layer is only 0.1mm thick and must therefore be applied precisely and smoothly to the Blu-ray Disc.

It's vital to Blu-ray technology that the disc surface is completely smooth and there are no protrusions which could interfere with the laser reader.

TDK recording media has optimised Spin Coating technology in order to apply the cover layer smoothly and precisely to the Blu-ray Disc. The curing resin protective layer is applied in a liquid state to a rotating disc. As a result of this coating process, a smooth cover layer with a precise thickness of 0.1mm can be applied to the disc's entire surface.

Thanks to the TDK recording media Spin Coating technology, the coating of the TDK Life on Record Blu-ray Disc is absolutely smooth.

tech02. DURABIS2 - maximum protection coating



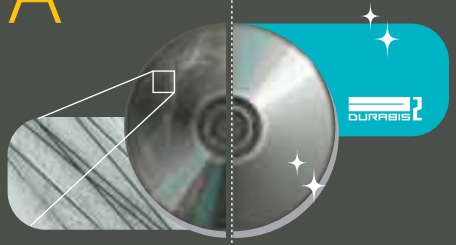
The Blu-ray Disc standard requires that discs have a scratch-free protective layer. With the DURABIS2 coating, TDK Life on Record has developed a protection technology that far exceeds the standard requirements.

The first generation of the DURABIS coating has already been used with our award-winning ScratchProof DVD recordable media, itself 100 times more scratchproof than ordinary DVD's.

In order to meet the new challenges of the Blu-ray Disc, we have developed the DURABIS2 protective layer, which is an even more effective scratch-protection technology.

DURABIS2 technology means TDK Life on Record Blu-ray Discs even withstand the steel wool test and are also dirt and dust repellent. Even fingerprint smudges can't interfere with the readability of the disc. With conventional discs, fingerprints can deposit a slight layer of grease that can redirect the laser and cause reading and writing errors.

A



Scratch proof

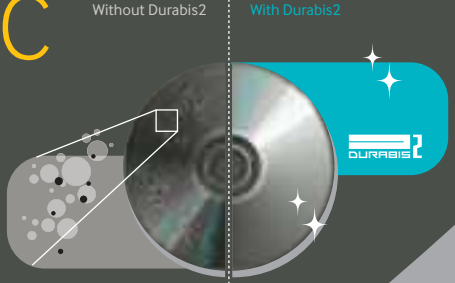
Over 100 times more scratch proof than ordinary DVD's.
Robust durability and maximum protection for error-free performance.

B

Superior fingerprint resistance

The microscopic view of a Durabis2 Disc proves that the fingerprint substance forms only minute particles that are to small too interfere with the laser.

C



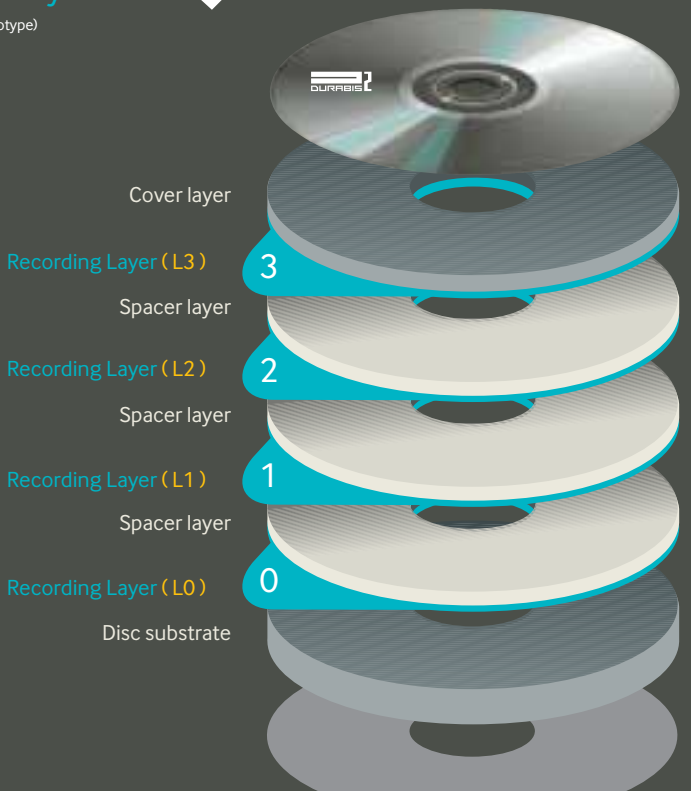
Dirt and dust repellent

Durabis technology provides outstanding static electrical properties, resulting in preventing dirt and dust to settle on the disc.

tech03. Recording layer design - multiple layers and high speed

Structure of TDK Life on Record 100GB Quad-Layer Blu-ray Disc

(Prototype)



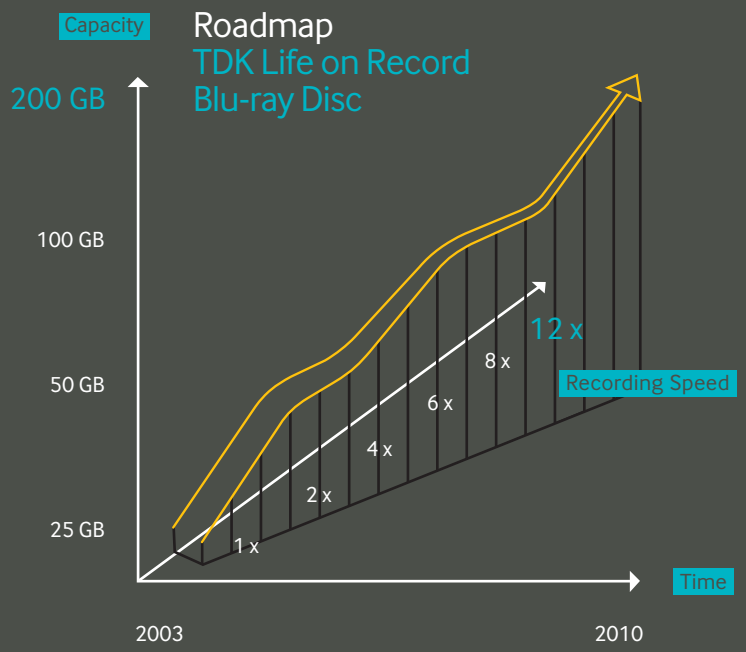
- The recording layer of the TDK Life on Record Blu-ray Disc is made up of inorganic material, which makes it a perfect, stable environment for long term data storage. The silicon and copper alloy recording layers of our BD-R are not sensitive to sunlight (ultra violet light) offering still further data archiving reliability.

  The surface allows an incredible 10.000 re-writes with BD-RE media without loss of quality.

  TDK recording media technologies have already produced prototypes of 100GB (4 layer) and 200GB (6 layer) Blu-ray Discs.

- The 100GB Blu-ray Disc will offer enough capacity to store 10 hours or more of the highest quality HD video.
  (Exact amount depends on encoding quality of content.)

TDK Life on Record Blu-ray Disc as a Reference Medium



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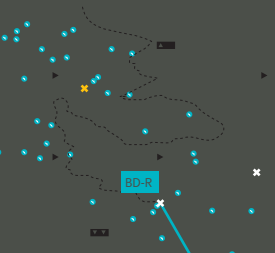

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